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Five hundred and sixty-fourth Meeting.

March 13, 1866. — ADJOURNED STATUTE MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary read letters relative to the exchanges.

The President called the attention of the Academy to the recent decease of Mr. Jonathan P. Hall of Boston, of the Resident Fellows.

In accordance with the recommendation of the Finance Committee it was *voted*, That the additional sum of five hundred dollars be appropriated for paper and printing, to be expended by the Publication Committee during the current year.

A committee was appointed, in accordance with the vote of the previous meeting, to consider and report upon the subject of expert testimony in courts of law; viz. Chief Justice Bigelow, Professor Washburn, Professor H. R. Storer, Dr. Tyler, Professor Rogers, Professor Horsford, and Professor J. Wyman.

Five hundred and sixty-fifth Meeting.

April 10, 1866. — MONTHLY MEETING.

The PRESIDENT in the chair.

The President called the attention of the Academy to the recent decease of Dr. Jared Sparks, of the Resident Fellows, of Dr. Charles Beck, Vice-President of the Academy, and of Dr. Whewell, of the Foreign Honorary Members.

The Secretary read a letter from the Treasurer of the Boston Athenæum to the Treasurer of the Academy, informing the Academy of the termination, on the 1st of July next, of the lease of the Academy's Hall, and notifying the Academy that the Trustees of the Athenæum propose to take possession of the Hall, after that date, for the use of the Athenæum.

On the motion of Mr. Bowditch the subject of this communication was referred to the Finance Committee, with powers to

make such arrangements with the Boston Athenæum as they may find feasible and deem expedient.

On the motion of Mr. Paine it was voted that application be made to the representatives of the late Jonathan P. Hall, for the meteorological observations made by him during the past nine years under the auspices of the Academy, and forming a sequel to the observations of Mr. Hall already published by the Academy.

Mr. Paine was appointed to make this application, and also to receive the apparatus furnished by the Academy for Mr. Hall's use.

Mr. C. M. Warren presented the following paper : —

Note on an Improved Apparatus for the Determination of Vapor Densities by Gay-Lussac's Method; being a Modification of Bunsen's Apparatus for measuring Aqueous Vapor. By C. M. WARREN.

HAVING recently had occasion to employ the method of Gay-Lussac for taking vapor densities, I decided to follow the lead of Carius,* and substitute for this purpose the steam-bath apparatus, Fig. 1, devised by Bunsen,† for measuring the aqueous vapor formed in the analysis of gases, — this seeming to me preferable to the apparatus described by Gay-Lussac. But when I came to use the apparatus which I had constructed, in conformity, as I supposed, with that of Bunsen, I found it defective in one particular. I allude to the fact that, in consequence of the accumulation of a stratum of water on the surface of the mercury in the cup *i*, Fig. 1, in which the measuring-tube, *e*, stands inverted, and also of an accumulation of water in dew-like drops on the sides of this cup, and on the sides of the cylinder *c c*, it was found impossible to make an accurate reading of the lower level of mercury.‡

As I was about to abandon the use of this apparatus and resort to that of Gay-Lussac, it occurred to me that the defect above mentioned

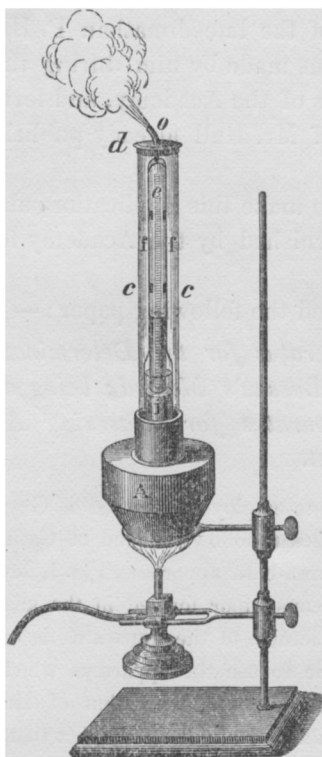
* *Annalen der Chemie und Pharmacie*, CXIX. 316.

† *Gasometrische Methode*, p. 52; English edition, p. 47.

‡ It is but just to remark, that my apparatus may have been defective in its proportions, — as dimensions were not given in Bunsen's description, — for it does not appear that either Bunsen or Carius had any difficulty in making accurate observations with the apparatus that they employed.

might be entirely remedied by supplying an additional cup, *n*, Fig. 2,

Fig. 1.



within the other; the inner cup being of such capacity that the mercury expelled from the measuring-tube during an experiment would be certain to cause an overflow of mercury (no matter how little) from the inner into the outer cup. With such an arrangement it is obvious that at the time of measurement the inner cup would be always full of mercury, and consequently that the latter would always stand at the same level on the measuring-tube; hence that this level may be previously ascertained, once for all, and thus obviate the necessity of making this reading during an experiment. It will then only be required to make the single reading at the upper level of the mercurial column. The difference between this level and the constant level, previously

ascertained, at the top of the mercury in the inner cup, will give directly the height of the column of mercury, which, corrected for temperature, is to be deducted from that of the barometer to find the pressure to which the vapor is subjected.

Fig. 2.



With this slight alteration of Bunsen's apparatus, it appears to me far preferable to the more complicated and expensive apparatus of Gay-Lussac. It has not only the advantage of greater simplicity, and of economy in the quantity of mercury required, but recommends itself also for its convenience, and the facility with which the vapor may be brought to and maintained at a constant temperature.